

REMARKS

In response to the above-identified Final Office Action (“Action”), Applicant seeks reconsideration thereof. In this response, Claim 11 has been amended, claims 1-10 have been cancelled and no claims have been added. Accordingly, claims 11-20 are pending.

The instant application is directed to a microfluidic device manufactured by binding a sensing substrate including a sensing electrode, an electrode interconnect, and an electrode pad, with a channel substrate including a first fluid inlet port at a side of the channel substrate, a first fluid addition chamber around the first fluid inlet port, a sample reaction barrier, a sensing chamber, a second fluid inlet port at the other side of the channel substrate, a second fluid addition chamber around the second fluid inlet port, a channel connecting the second fluid addition chamber and the sensing chamber, and a used reagent reservoir connected to the sensing chamber, wherein a sample injected via the first fluid inlet port flows into the sensing chamber through the first fluid addition chamber by capillary force and stops flowing at the sensing chamber having appreciably large outlets, and a buffer solution loaded via the second fluid inlet port flows by the action of an external pump, through the channel and the sensing chamber, for washing reacted products, and is reserved in the used reagent reservoir.

I. Amendments to the Claims

Applicant respectfully submits herewith amendments to Claims 11 and 18. Claim 11 is amended to clarify that “a buffer solution loaded via the second fluid inlet port flows by the action of an external pump through the channel and the sensing chamber, for washing reacted products, and is reserved in the used reagent reservoir.” Support of the amendments to Claim 11 may be found, for example, on page 9, lines 17-21. Claim 18 is amended to depend from Claim 17 instead of cancelled Claim 7. In view of the foregoing, Applicant respectfully requests consideration and entry of the amendments to Claims 11 and 18.

II. Claims Rejected Under 35 U.S.C. §103(a)

A. The Examiner rejects Claims 1-4 under 35 U.S.C. 103(a) as being unpatentable over U. S. Publication No. 2004/0007275 to Hui Liu et al ("Hui"). Applicant respectfully traverses this rejection for at least the following reasons.

Claims 1-4 are cancelled in the instant response therefore the rejection of the claims under 35 U.S.C. 103(a) is moot.

B. The Examiner rejects Claims 5-9 under 35 U.S.C. 103(a) as being unpatentable over Hui Liu in view of U.S. Publication No. 20020150683 to Troian et al ("Troian"). Applicant respectfully traverses this rejection for at least the following reasons.

Claims 5-9 are cancelled in the instant response therefore the rejection of the claims under 35 U.S.C. 103(a) is moot.

C. The Examiner rejects Claims 10-14 and 20 under 35 U.S.C. 103(a) as being unpatentable over Hui in view of U.S. Publication No. 20030190608 to Blackburn et al ("Blackburn"). Applicant respectfully traverses this rejection for at least the following reasons.

To render a claim obvious, the relied upon references must teach or suggest every limitation of the claim such that the invention as a whole would have been obvious at the time the invention was made to one skilled in the art.

In regard to Claim 10, Claim 10 is cancelled in the instant response therefore the rejection of the claim under 35 U.S.C. 103(a) is moot.

In regard to independent Claim 11, Claim 11 is not *prima facie* obvious over Hui in view of Blackburn for at least the reason that the references fail to teach or suggest a microfluidic device wherein "a buffer solution loaded via the second fluid inlet port flows by the action of an external pump through the channel and the sensing chamber, for washing reacted products, and is reserved in the used reagent reservoir" as recited in Claim 11.

The Examiner admits Hui fails to disclose an "external pump." Instead, the Examiner alleges it would have been obvious to employ such a pump in Hui to reduce the complexity of the microfluidic structure. See Action, page 3. Hui, however, does not contemplate that the device as described is complex, much less a desire to reduce the complexity of the device by modifying the pump feature. Moreover, the Examiner has not provided any evidence showing that an external pump would be suitable in Hui or reduce the alleged complexity of the structure described in Hui. Thus, upon review of the reference, one of ordinary skill in the art would not

understand a desire to modify Hui to include an external pump. Instead, it appears it is only upon review of Applicant's disclosure that the desirability of an external pump is discerned. As the Examiner is no doubt aware, such hindsight reconstruction is an inappropriate basis for combining references to render claims obvious.

Hui further may not be relied upon to teach or suggest the washing operation for reacted products using a buffer solution loaded via the second fluid inlet port as further recited in Claim 1. The Examiner has not pointed to, and Applicant is unable to discern, a portion of the reference teaching this element. Instead, Hui relates to an active type device using a pump heater 205, a valve element heater 210, etc. and primarily discloses a one-way valve in fluid communication with channels 130 and 310. Hui does not contemplate a passive type device using channel geometry changes or surface modifications having a two-way fluid path including first and second inlet ports. Thus, not only does Hui fail to expressly teach this element, one of ordinary skill in the art would not be motivated by Hui to modify the reference to incorporate a washing operation for reacted products using a buffer solution loaded via a second fluid inlet port as recited in Claim 11.

The Examiner has further not pointed to, and Applicant is unable to discern, a portion of Blackburn curing the deficiencies of Hui with respect to the above recited elements.

For at least the foregoing reasons, Hui in view of Blackburn fails to teach or suggest all the elements of Claim 11 therefore a *prima facie* case of obviousness may not be established. Applicant respectfully requests reconsideration and withdrawal of the rejection of Claim 11 under 35 U.S.C. §103.

Claims 12-14 and 20 depend from Claim 11 and incorporate the limitations thereof. Thus, for at least the reasons that Claim 11 is not *prima facie* obvious over Hui, Claims 12-14 and 20 are further not obvious over the reference. In view of the foregoing, Applicant respectfully requests withdrawal of the rejection of Claims 12-14 and 20 under 35 U.S.C. §103.

D. The Examiner rejects Claims 15-19 under 35 U.S.C. 103(a) as being unpatentable over Hui in view of Blackburn and further in view of Trojan. Applicant respectfully traverses this rejection for at least the following reasons.

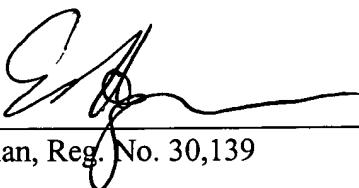
In regard to Claims 15-19, these claims depend from Claim 11 and incorporate the limitations thereof. Thus, for at least the reasons previously discussed, Hui in view of Blackburn fails to teach or suggest at least the elements of “a buffer solution loaded via the second fluid inlet port flows by the action of an external pump through the channel and the sensing chamber, for washing reacted products, and is reserved in the used reagent reservoir” as found in Claims 15-19. The Examiner has further not pointed to, and Applicant is unable to discern a portion of Troian curing the deficiencies of Hui and Blackburn with respect to these elements. Since each of the elements of Claims 15-19 are not found in the combination of Hui, Blackburn and Troian, Claims 15-19 are not *prima facie* obvious over the references. Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 15-19 under 35 U.S.C. §103.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending, namely 11-19 patentably define the subject invention over the prior art of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 207-3800.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP



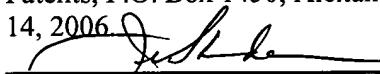
Dated: July 14, 2006

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CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 14, 2006.



Jean Svoboda